

What is claimed is:

1. A carrier class switch apparatus comprising:

means for receiving a voice call having a first media type being one of

5 TDM voice/fax, VoIP, VoATM and VoFR, and a first signaling type

corresponding to said first media type;

means for converting said voice call to a second media type being

another of TDM voice/fax, VoIP, VoATM and VoFR;

means for relaying signaling associated with said voice call of said

10 first signaling type to a second signaling type corresponding to said second media type; and

means for forwarding said voice call having said second media

type.

15 2. An apparatus according to claim 1, wherein said means for receiving

said voice call includes means for receiving said voice call at a first interface of

said switch apparatus, said first interface being one of a broadband interface and

a narrowband interface, and wherein said means for forwarding said voice call

includes means for forwarding said voice call at a second interface of said switch

20 apparatus, said second interface being one of said broadband interface and said

narrowband interface.

3. An apparatus according to claim 1, further comprising:

means for associating said voice call with a quality of service requirement.

5 4. An apparatus according to claim 3, further comprising:

means for determining said quality of service requirement in accordance with a service plan profile of a party associated with said voice call.

5. An apparatus according to claim 3, further comprising:

means for determining said quality of service requirement in accordance with instantaneous availability of bandwidth resources.

6. An apparatus according to claim 2, further comprising:

means for switching packets associated with said voice call between
said first interface and said second interface.

7. An apparatus according to claim 6, further comprising:

means for converting said voice-call into said packets having an intermediate switching media type.

8. An apparatus according to claim 7, wherein said intermediate switching media type is ATM cells.

9. An apparatus according to claim 6, further comprising:

means for associating said voice call with a quality of service

requirement,

5 said means for switching packets associated with said voice call

being adapted to switch said packets at a rate corresponding to said quality of

service requirement.

10. An apparatus according to claim 9, further comprising:

means for determining said quality of service requirement in

accordance with a service plan profile of a party associated with said voice call.

11. An apparatus according to claim 9, further comprising:

means for determining said ~~quality~~ of service requirement in

accordance with instantaneous availability of bandwidth resources.

12. A method of providing differential voice over the network services in a carrier class switch apparatus comprising:

receiving a voice call having a first media type being one of TDM

20 voice/fax, VoIP, VoATM and VoFR, and a first signaling type corresponding to
said first media type;

converting said voice call to a second media type being another of

TDM voice/fax, VoIP, VoATM and VoFR;

relaying signaling associated with said voice call of said first signaling type to a second signaling type corresponding to said second media type; and

5 forwarding said voice call having said second media type.

13. A method according to claim 12, wherein said step of receiving said voice call includes receiving said voice call at a first interface of said switch apparatus, said first interface being one of a broadband interface and a narrowband interface, and wherein said step of forwarding said voice call includes forwarding said voice call at a second interface of said switch apparatus, said second interface being one of said broadband interface and said narrowband interface.

14. A method according to claim 12, further comprising:
associating said voice call with a quality of service requirement.

15. A method according to claim 14, further comprising:
determining said quality of service requirement in accordance with a service plan profile of a party associated with said voice call.

16. A method according to claim 14, further comprising:

determining said quality of service requirement in accordance with instantaneous availability of bandwidth resources.

17. A method according to claim 13, further comprising:

switching packets associated with said voice call between said first interface and said second interface.

18. A method according to claim 17, further comprising:

converting said voice call into said packets having an intermediate switching media type.

19. A method according to claim 18, wherein said intermediate switching media type is ATM cells.

20. A method according to claim 17, further comprising:

associating said voice call with a quality of service requirement, said step of switching packets associated with said voice call being performed so as to switch said packets at a rate corresponding to said quality of service requirement.

21. A method according to claim 20, further comprising:

determining said quality of service requirement in accordance with a

service plan profile of a party associated with said voice call.

22. A method according to claim 20, further comprising:

determining said quality of service requirement in accordance with

5 instantaneous availability of bandwidth resources.

23. A carrier class switch apparatus integrated in a single switching platform comprising:

a switching fabric adapted to switch packets between a plurality of

10 broadband switching ports;

a broadband interface coupled to one of said plurality of broadband switching ports, said broadband interface being adapted to communicate a voice call between said switching fabric and a broadband connection, said voice call communicated by said broadband interface with said broadband connection having a first media type being one of TDM voice/fax, VoIP, VoATM and VoFR, and a first signaling type corresponding to said first media type;

a local switch module coupled to another one of said plurality of broadband switching ports and to one or more narrowband interfaces, at least one of said narrowband interfaces being adapted to communicate a voice call between said switching fabric and a narrowband connection, said voice call communicated by said at least one narrowband interface with said narrowband connection having a second media type being another of TDM voice/fax, VoIP,

VoATM and VoFR, and a second signaling type corresponding to said second media type; and

a switch control card coupled to said broadband interface and said narrowband interfaces, said switch control card being adapted to communicate with a call server for relaying signaling associated with said voice call of said first signaling type to a second signaling type corresponding to said second media type.

24. An apparatus according to claim 23, wherein said switch control card is further adapted to route and manage virtual circuit connections between said plurality of broadband switching ports associated with said voice call in accordance with a quality of service requirement for said voice call.

25. An apparatus according to claim 23, wherein said at least one narrowband interface further includes a voice/fax controller that converts packets associated with said voice call between said second media type and said first media type.

26. An apparatus according to claim 25, wherein said voice/fax controller includes:

a plurality of digital signal processors that convert between digitized voice/fax streams associated with said voice call for communication by said

SUB #17

954639-239638

narrowband connection and voice/fax packets for communication by said switching fabric;

a DSP service engine that repacketizes said voice/fax packets received from and sent to said digital signal processors in accordance with said first media type; and

a digital signal processor controller that controls packet communication between said digital signal processors and said DSP service engine.

27. An apparatus according to claim 25, wherein said at least one narrowband interface further includes a multi-service engine that converts said packets between said second media type and an intermediate switching media type of said switching fabric.

28. An apparatus according to claim 27, wherein said intermediate switching media type is ATM cells.

29. An apparatus according to claim 26, wherein said at least one narrowband interface further includes a multi-service engine that communicates with said DSP service engine and converts said packets between said second media type and an intermediate switching media type of said switching fabric.

30. An apparatus according to claim 24, wherein said at least one narrowband interface further includes:

a voice/fax controller that converts packets associated with said voice call between said second media type and said first media type; and

a multi-service engine that converts said packets between said second media type and an intermediate switching media type of said switching fabric.

31. An apparatus according to claim 30, wherein said at least one narrowband interface further includes:

a virtual circuit queue for buffering said packets between said voice/fax controller and said switching fabric; and

a SAR engine for servicing said virtual circuit queue in accordance with said quality of service requirement.